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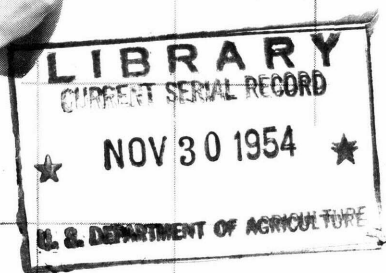
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# AN AMERICAN-TYPE

# Cheese

... how to  
make it for  
**HOME USE**



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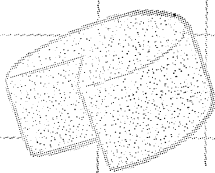
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# AN AMERICAN-TYPE *Cheese*



## How To Make It for Home Use

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### You Can Make Good Cheese at Home

Until about 1850, cheesemaking was a local farm industry. Housewives made cheese from the surplus milk produced on the farm and sold at farmers' markets what the family did not need. Most of it was what is known today as granular or stirred-curd cheese, an American-type cheese similar to Cheddar.

Granular or stirred-curd cheese, which is described in this bulletin, is made by a less complicated process than Cheddar and therefore is recommended for making in the home. However, it differs somewhat from present-day factory-made American Cheddar cheese.

The first cheese factory in the United States was built in 1851, and since that time factory manufacture has largely replaced the making of cheese in the home. With increased scientific knowledge, especially since 1900, tests have been devised that make it possible to control carefully each step in the manufacturing process and to produce cheese uniformly high in quality.

It is not practical for the housewife to follow the carefully controlled factory method when making a small quantity of cheese for home use. Therefore, a cheese made at one time may differ somewhat

from one made at another time. However, by following the directions in this bulletin, cheese satisfactory for home use can be made with simple equipment that is usually available on the farm. The housewife can determine from experience how much of each ingredient to use, within the limits given in the directions, and how much time to allow for each step.

### Equipment and Facilities

You will need the following equipment and facilities to make one cheese weighing about 2 or 3 pounds:

- 1 container**, such as a waterbath canner, tinned lard can, or milk pail, large enough to hold 10 to 12½ quarts (20 to 25 pounds) of milk. Do not use galvanized utensils, or those with cracks, rusty spots, or abrasions.
- 1 floating dairy thermometer**, which you can obtain from any dairy supply company and at most drug stores.
- 1 spoon or stirrer** with a handle long enough to reach to the bottom of the container.
- 1 measuring cup.**
- 1 set of measuring spoons.**

**1 knife** with a blade long enough to reach to the bottom of the container.

**1 dipper.**

**1 dishpan** or similar container.

**1 piece of cheesecloth** large enough to fit over the dishpan, as shown in figure 7.

**1 cheese hoop**, which you can make from a No. 10 tin can or any other 1-gallon tinned container with straight sides. Punch about a dozen small holes in the bottom of the can with a 6-penny nail. Punch the holes from the inside of the can, as shown in figure 11, so there will be no jagged edges to tear the cheese.

**2 round cap cloths**, the same diameter as the hoop. You can make these from flour or salt sacks, or similar cotton cloth. (One is placed in the bottom of the hoop before the curd is put in; the other is laid on top of the hooped curd.)

**1 follower**, which is a round piece of wood about 2 or 3 inches thick and just enough smaller in diameter than the hoop so it can be pressed down over the hooped curd, as shown in figure 10. Make the follower from dressed lumber. Do not use wood that is gummy or acid or has other objectionable substances that will taint the cheese.

**1 cheese press**, which you can make from two 1-inch boards 12 inches square and a broomstick handle, as shown in figure 10.

**8 or 10 building bricks**, or other similar weights, totaling 30 or 40 pounds.

**1 bandage**, which is a piece of cheesecloth or similar lightweight cotton cloth. It should be about 2 inches wider than the pressed

cheese and long enough to wrap around the cheese with a 1-inch overlap.

**Paraffin**, to cover the cheese. Cheese is paraffined to keep it from drying too much and also to prevent the growth of molds.

**Drying and curing room.** Usually the best place to dry and cure cheese on the farm is on shelves in the basement of the house or in the spring house. The temperature of the room should be between 50° and 60° F. In summer you can lower the temperature somewhat by opening the windows and doors at night and closing them during the day. The shelves should be removable so you can wash them and dry them in the sun each week. This will kill most mold spores that may be present. The doors and windows should be screened with cheesecloth to keep out the cheese fly, which is much smaller than the house fly. If the cheese fly gains access to the curing room, the room will become infested with cheese mites or "skippers," and they may cause a loss of some of the cheese. If the cheese has a rind free from openings and if you keep the room and shelves clean and free from fat, the cheese fly will not have a suitable place to lay eggs.

All the utensils should be either scalded with boiling water or treated with a chlorine solution and rinsed with water before they are used. You can obtain the chlorine solution at most drug stores. Follow the manufacturer's directions for its use.

All utensils should be washed thoroughly and scalded immediately after they are used.

## Ingredients

### **Milk, either raw or pasteurized.**

You will need at least 10 to 12½ quarts (20 to 25 pounds) of milk. It is best to use whole milk. If you use partly skimmed milk, the quality of the cheese will be poor and the yield will be low. You will obtain about 2 pounds of cheese from 25 pounds of milk containing 3 percent of fat; 2½ pounds from 4-percent milk; and 3 pounds from 5-percent milk.

**Starter**, if you use pasteurized milk. You will need about ½ cup of starter for 10 to 12½ quarts of pasteurized milk. Cultured buttermilk, which you can obtain from a local dairy, is suitable for use as a starter.

**Rennet**, either rennet extract or rennet tablets. You can obtain these from a dairy supply house or at the local drug store. You will need about ½ teaspoon of rennet extract (diluted in ½ cup of cool water) for 10 to 12½ quarts of milk. Rennet tablets differ in composition, so if you use tablets follow the manufacturer's directions.

**Cheese color** (optional). If you make cheese during the winter and do not add color to the milk, the cheese will be practically white; in the summer, it will be the color of light straw. If you want to make cheese that is a deeper yellow, add cheese color to the milk. You can obtain cheese color in either liquid or tablet form from a dairy supply house or at the local drug store. Never use butter color, as it colors only the butterfat. You will need ⅛ to ¼ teaspoon of liquid color (diluted in ¼ cup of cool water) for 10 to 12½ quarts of milk. Cheese color tablets differ

in composition, so if you use tablets follow the manufacturer's directions.

**Salt.** You can use ordinary table salt, but it is better to use a high-grade coarse-flake cheese salt because it dissolves more slowly and therefore more will be absorbed by the curd. You can obtain cheese salt from a dairy supply house or at the local drug store. You will need 1¾ to 2 tablespoons of salt for 10 to 12½ quarts of milk.

## Selecting the Milk

You cannot make good-quality cheese unless you start with good-quality milk.

The milk should come from cows that are free of disease and udder infections. It is especially important *not* to use milk from any cow that has been treated with an antibiotic for an udder infection until at least 3 days after the last treatment. A very small quantity of antibiotic in the milk will keep the acid from developing properly during the cheesemaking process.

The cows should be kept clean, and they should be milked in a place that is free from dust and objectionable odors.

## Preparing the Milk

You can be more certain of making good-quality cheese, and it will be more wholesome, if you use pasteurized milk rather than raw milk. Pasteurization kills any disease-producing bacteria that may be in the raw milk and any undesirable bacteria, such as those that produce gas or off-flavors in cheese. At the same time, it kills the desirable bacteria that are needed to produce acid during the cheesemaking proc-

ess, and therefore you must add a starter of lactic acid-producing bacteria to pasteurized milk.

Whether you use raw or pasteurized milk, you must hold it until it has developed some lactic acid (ripened) before you start to make the cheese. More acid develops as the cheese is being made.

If you use raw milk, it is best to use a mixture of evening and morning milk. Cool the evening milk to a temperature of 60° F., and hold it at that temperature overnight; otherwise it may develop too much acid and the cheese may have an acid flavor and may be pasty or mealy. Cool the morning milk to 60° before you mix it with the evening milk.

If you use only morning milk, cool it to 60° or 70° F., and hold (ripen) it for 3 to 4 hours; otherwise the cheese may not develop enough acid to produce the desired flavor and may have a weak body.

When you are ready to make the cheese, warm the milk over low heat to 86° F. and stir it slowly while it is being warmed, as shown in figure 1. Take great care not to scorch the milk or let it stick to the bottom of the container.

If you decide to use pasteurized milk, cool the raw milk to 60° F. and hold it at that temperature until just before you are ready to make the cheese. Then pasteurize the milk as follows: Heat the milk rapidly to 143°. Hold it at 143° for 30 minutes, reheating slightly if necessary to maintain that temperature. Stir constantly to be sure the milk does not scorch or stick to the bottom of the container. Then set the container in cold water and continue stirring until the milk has cooled to 86°. Then add the starter ( $\frac{1}{2}$  cup of starter for 10 to 12½ quarts of milk) and ripen the milk

for 30 to 60 minutes at 86° before adding the rennet. Place the container over low heat if necessary to keep the milk at 86°. (See figure 1.)

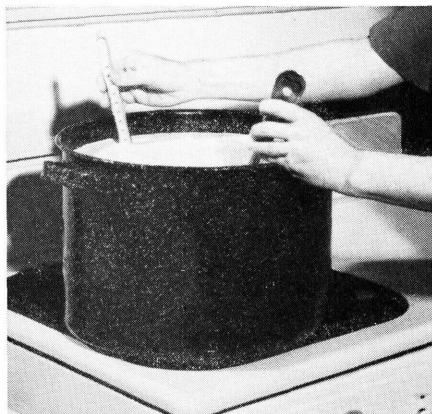


FIGURE 1.—Warming the milk.

Except for adding the starter to pasteurized milk, the same method is used for making cheese from either raw or pasteurized milk.

### **Adding the Cheese Color**

If you decide to use cheese color, add  $\frac{1}{8}$  to  $\frac{1}{4}$  teaspoon of liquid color (diluted in  $\frac{1}{4}$  cup of cool water) to 10 to 12½ quarts of milk when the milk has reached a temperature of 86° F. Stir the milk for about 2 minutes to be sure the color is mixed in thoroughly. If you use color tablets, follow the manufacturer's directions.

### **Adding the Rennet**

With the milk at 86° F., add enough rennet so the milk will coagulate into firm, jelly-like curd in about 30 minutes (fig. 2). Usually



$\frac{1}{4}$  to  $\frac{1}{2}$  teaspoon of rennet (diluted in  $\frac{1}{2}$  cup of cool water) will be enough for 10 to 12 $\frac{1}{2}$  quarts of milk. If you use rennet tablets, follow the manufacturer's directions.

Stir the milk for about 2 minutes to be sure the rennet is mixed in thoroughly. Then cover the container, to keep the surface of the milk warm, and let the milk remain undisturbed until it has coagulated. Otherwise the curd will be broken and grainy and the whey will separate from the curd before the curd is firm enough to be cut.

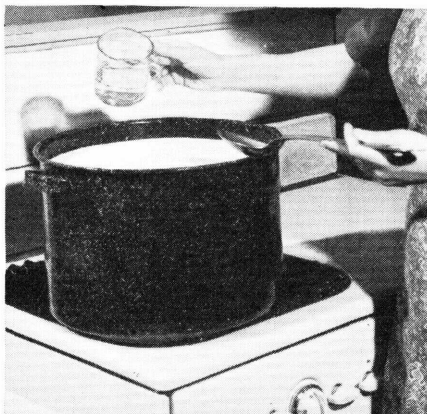


FIGURE 2.—Adding the diluted rennet.

## Cutting the Curd

About 30 minutes after you add the rennet, the curd should be ready to be cut. Before cutting the curd, test it as shown in figure 3. Insert a forefinger into the curd at an angle, then split the curd with the thumb and raise the finger slowly. If the curd splits cleanly over the finger and clear whey fills the opening, it is ready to be cut.

With a clean knife that has a blade long enough to reach from the surface of the curd to the bottom of the container, slice the curd into  $\frac{3}{8}$ -inch pieces, as shown in figure 4.

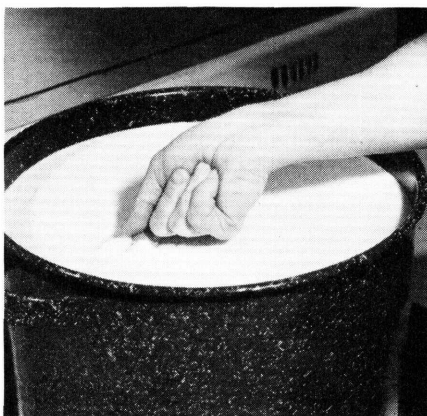
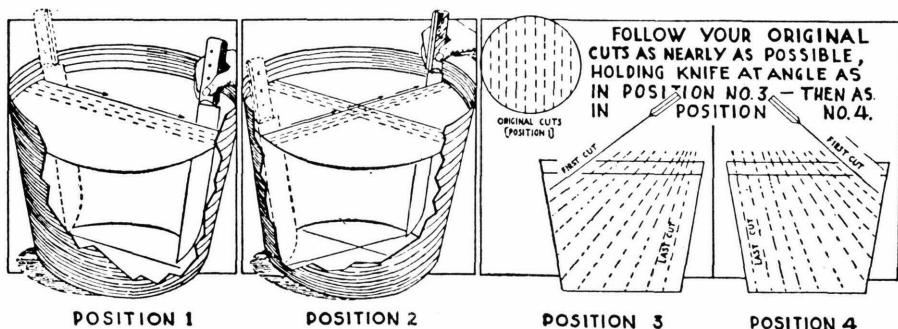


FIGURE 3.—Testing the curd to see if it is ready to be cut.



### POSITIONS OF KNIFE IN CUTTING CURD

FIGURE 4.—Diagram showing how to cut the curd.





FIGURE 5.—Heating the curd.

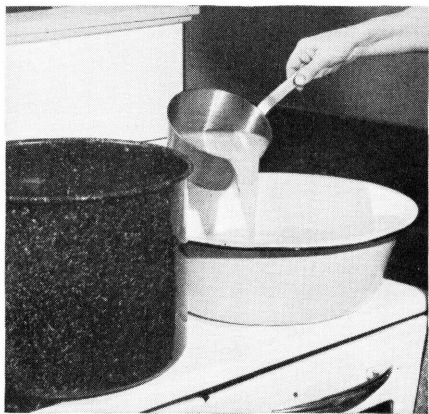


FIGURE 6.—Dipping the whey.

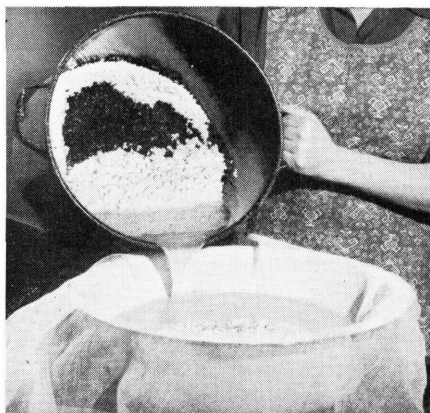


FIGURE 7.—Draining the whey.

Then stir the curd occasionally with a large spoon or paddle. Stir it carefully, to prevent breaking the pieces of curd. About 15 minutes after you finish cutting the curd, it is time to start heating the curd and whey.

### Heating the Curd

Heat the curd slowly (at the rate of  $2^{\circ}$  every 5 minutes) to a final temperature of  $100^{\circ}$  to  $102^{\circ}$  F. in 30 to 40 minutes, and hold it at this temperature until it has developed the desired firmness (fig. 5). Stir it gently to keep the cubes of curd from sticking together and forming lumps. If the curd is lumpy, there may be light-colored spots in the cheese. As it becomes firmer, it will require less stirring to keep it from lumping.

To determine when the curd has developed the desired firmness, test it as follows: Squeeze a handful gently, then release it suddenly. If it breaks apart easily and shows very little tendency to stick together, remove the container from the stove and get ready to remove the whey. It should reach this stage from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  hours after you added the rennet to the milk.

This is the most critical stage in the whole process. If the curd is not firm enough when you remove the whey, the cheese will be of inferior quality. It may have a weak, pasty body, may develop sour or undesirable flavors in a short time, and may not hold its shape. On the other hand, if the curd is too firm, the cheese will be dry and corky and will develop flavor slowly.

### Removing the Whey

The easiest and quickest way to remove the whey is to wait until the curd has settled to the bottom of

the container. Then use a dipper to dip off most of the whey (fig. 6), and dip or pour the rest of the whey and the curd onto cheesecloth which you have placed over a dishpan or other container, as shown in figure 7. The whey may be fed to pigs or chickens.

Lift the curd in the cheesecloth and, when most of the whey has drained off, put the curd into a container. Tilt the container several times to remove any additional whey that drains from the curd. Stir the curd occasionally to keep it as free from lumps as possible.

The curd is ready to be salted when it has cooled to 90° F. and has developed a slight amount of acid. When it has developed enough acid, it will have a rubbery texture and will make a squeaky sound when you chew a small piece.

### Salting the Curd

Add  $1\frac{3}{4}$  to 2 tablespoons of salt to the curd made from 10 to  $12\frac{1}{2}$  quarts of milk. Sprinkle the salt evenly throughout the curd and mix it in thoroughly, as shown in figure 8. As soon as the salt has dissolved and the curd has cooled to 85° F., put it in the hoop. Be sure the curd has cooled sufficiently. If you put it in the hoop when it is too warm, too much fat may be pressed out and undesirable fermentation may occur.

### Hooping and Pressing the Curd

Place one of the cap cloths in the bottom of the hoop, fill the hoop with curd (fig. 9), and place the other cap cloth on top of the curd. Then place the wooden follower on top of the cap cloth and put the hoop of curd in the press (fig. 10).



FIGURE 8.—Salting the curd.

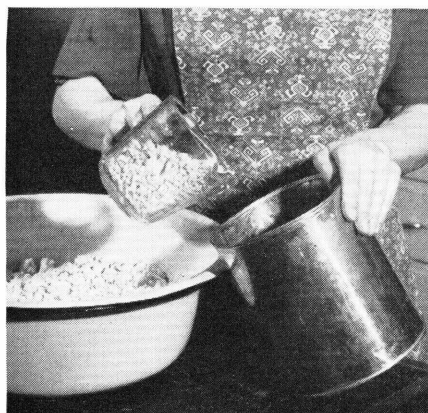


FIGURE 9.—Hooping the curd.



FIGURE 10.—Pressing the curd.



Place a weight of 12 to 15 pounds (3 or 4 bricks) on the follower for 5 to 10 minutes, then increase the weight to 25 or 30 pounds. The cheese should be firm enough to be dressed after it has been under pressure for 30 to 60 minutes.

### Dressing the Cheese

Remove the weights and follower from the press and turn the hoop upside down on a table so the cheese can drop out. Remove the cap cloths and dip the cheese in warm water (100° F.) to remove any fat from the surface. Cut a cheesecloth or lightweight cotton bandage 2 inches wider than the cheese and long enough to wrap around the cheese with a 1-inch overlap. Then wrap the cheese tightly in the bandage, as shown in figure 11, replace the cap cloths, and put the cheese back in the hoop. Replace the follower and press the cheese with a weight of 30 to 40 pounds for 16 to 20 hours.

### Drying the Cheese

At the end of the pressing period, remove the cheese from the press, wipe it with a clean, dry cloth to remove any surface moisture or butterfat, and examine the surface. Be sure the surface is smooth and free from cracks or openings before you put the cheese in the drying room. Mold that may grow on the surface will not cause serious trouble if there are no openings through which it can enter the cheese. If there are any openings or cracks in the surface, remove the bandage, dip the cheese in warm water again to soften the surface, rebandage the cheese, and put it back in the press for about an hour.

When the surface is smooth and has no cracks or openings, put the bandaged cheese on a shelf in the drying room. Turn the cheese and wipe it daily with a clean, dry cloth while it is drying. As soon as the surface feels dry and the rind has started to form—usually in 3 to 6 days—the bandaged cheese is ready to be paraffined. If it has not started to form a dry rind in about 6 days, it should be put in a drier room.

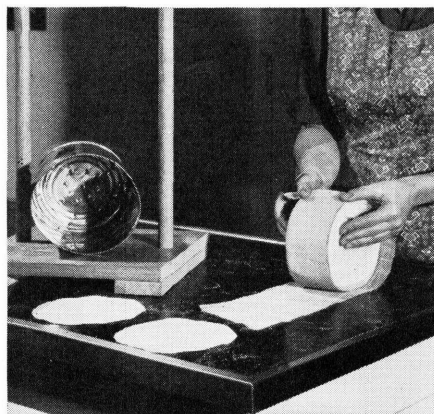


FIGURE 11.—Dressing the cheese.

### Paraffining the Cheese

Be sure the surface of the cheese is dry; otherwise the paraffin will not stick to it.

Heat the paraffin to between 210° and 212° F. in a pan deep enough so you can immerse half the cheese at a time. If the temperature of the paraffin is below 210° when the cheese is immersed, the coat of paraffin will be so thick that it will scale off during curing.

Hold the cheese in the hot paraffin for about 10 seconds when you immerse the first half. Let that dry for a minute or two, then immerse the other half.

## Curing the Cheese

After you have paraffined the cheese, put it back on the shelf to cure. Turn it often enough to keep it clean and free from mold. Wash the shelf once a week and dry it in the sun.

If you have followed the directions given here carefully throughout the entire making process, your cheese should have a firm body and a mild flavor when it has cured for about 6 weeks at a temperature of

50° to 60° F. If you want cheese with a sharp flavor, it should be cured for 3 to 5 months or even longer. It will cure more slowly at a temperature below 50° and therefore will need to cure longer to develop the same relative sharpness of flavor.

If you made the cheese from raw milk, it is advisable as a safety measure to cure it for at least 8 weeks.

